

## § 193.2627

(b) Components whose integrity or reliability could be adversely affected by corrosion must be either—

(1) Protected from corrosion in accordance with §§ 193.2627 through 193.2635, as applicable; or

(2) Inspected and replaced under a program of scheduled maintenance in accordance with procedures established under § 193.2605.

### § 193.2627 Atmospheric corrosion control.

Each exposed component that is subject to atmospheric corrosive attack must be protected from atmospheric corrosion by—

(a) Material that has been designed and selected to resist the corrosive atmosphere involved; or

(b) Suitable coating or jacketing.

### § 193.2629 External corrosion control: buried or submerged components.

(a) Each buried or submerged component that is subject to external corrosive attack must be protected from external corrosion by—

(1) Material that has been designed and selected to resist the corrosive environment involved; or

(2) The following means:

(i) An external protective coating designed and installed to prevent corrosion attack and to meet the requirements of § 192.461 of this chapter; and

(ii) A cathodic protection system designed to protect components in their entirety in accordance with the requirements of § 192.463 of this chapter and placed in operation before October 23, 1981, or within 1 year after the component is constructed or installed, whichever is later.

(b) Where cathodic protection is applied, components that are electrically interconnected must be protected as a unit.

[Amdt. 193-2, 45 FR 70407, Oct. 23, 1980, as amended at 47 FR 32720, July 29, 1982]

### § 193.2631 Internal corrosion control.

Each component that is subject to internal corrosive attack must be protected from internal corrosion by—

(a) Material that has been designed and selected to resist the corrosive fluid involved; or

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(b) Suitable coating, inhibitor, or other means.

### § 193.2633 Interference currents.

(a) Each component that is subject to electrical current interference must be protected by a continuing program to minimize the detrimental effects of currents.

(b) Each cathodic protection system must be designed and installed so as to minimize any adverse effects it might cause to adjacent metal components.

(c) Each impressed current power source must be installed and maintained to prevent adverse interference with communications and control systems.

### § 193.2635 Monitoring corrosion control.

Corrosion protection provided as required by this subpart must be periodically monitored to give early recognition of ineffective corrosion protection, including the following, as applicable:

(a) Each buried or submerged component under cathodic protection must be tested at least once each calendar year, but with intervals not exceeding 15 months, to determine whether the cathodic protection meets the requirements of § 192.463 of this chapter.

(b) Each cathodic protection rectifier or other impressed current power source must be inspected at least 6 times each calendar year, but with intervals not exceeding 2½ months, to ensure that it is operating properly.

(c) Each reverse current switch, each diode, and each interference bond whose failure would jeopardize component protection must be electrically checked for proper performance at least 6 times each calendar year, but with intervals not exceeding 2½ months. Each other interference bond must be checked at least once each calendar year, but with intervals not exceeding 15 months.

(d) Each component that is protected from atmospheric corrosion must be inspected at intervals not exceeding 3 years.

(e) If a component is protected from internal corrosion, monitoring devices designed to detect internal corrosion, such as coupons or probes, must be located where corrosion is most likely to

occur. However, monitoring is not required for corrosion resistant materials if the operator can demonstrate that the component will not be adversely affected by internal corrosion during its service life. Internal corrosion control monitoring devices must be checked at least two times each calendar year, but with intervals not exceeding 7½ months.

**§ 193.2637 Remedial measures.**

Prompt corrective or remedial action must be taken whenever an operator learns by inspection or otherwise that atmospheric, external, or internal corrosion is not controlled as required by this subpart.

**§ 193.2639 Maintenance records.**

(a) Each operator shall keep a record at each LNG plant of the date and type of each maintenance activity performed on each component to meet the requirements of this part. For each LNG facility that is designed and constructed after March 31, 2000 the operator shall also maintain related periodic inspection and testing records that NFPA 59A (incorporated by reference, *see* § 193.2013) requires. Maintenance records, whether required by this part or NFPA 59A, must be kept for a period of not less than five years.

(b) Each operator shall maintain records or maps to show the location of cathodically protected components, neighboring structures bonded to the cathodic protection system, and corrosion protection equipment.

(c) Each of the following records must be retained for as long as the LNG facility remains in service:

(1) Each record or map required by paragraph (b) of this section.

(2) Records of each test, survey, or inspection required by this subpart in sufficient detail to demonstrate the adequacy of corrosion control measures.

[Amdt. 193-2, 45 FR 70407, Oct. 23, 1980, as amended by Amdt. 193-17, 65 FR 10960, Mar. 1, 2000; Amdt. 193-18, 69 FR 11337, Mar. 10, 2004]

**Subpart H—Personnel Qualifications and Training**

SOURCE: Sections 193.2707 through 193.2719 appear at Amdt. 193-2, 45 FR 70404, Oct. 23, 1980, unless otherwise noted.

**§ 193.2701 Scope.**

This subpart prescribes requirements for personnel qualifications and training.

[45 FR 9219, Feb. 11, 1980]

**§ 193.2703 Design and fabrication.**

For the design and fabrication of components, each operator shall use—

(a) With respect to design, persons who have demonstrated competence by training or experience in the design of comparable components.

(b) With respect to fabrication, persons who have demonstrated competence by training or experience in the fabrication of comparable components.

[45 FR 9219, Feb. 11, 1980]

**§ 193.2705 Construction, installation, inspection, and testing.**

(a) Supervisors and other personnel utilized for construction, installation, inspection, or testing must have demonstrated their capability to perform satisfactorily the assigned function by appropriate training in the methods and equipment to be used or related experience and accomplishments.

(b) Each operator must periodically determine whether inspectors performing construction, installation, and testing duties required by this part are satisfactorily performing their assigned functions.

[45 FR 9219, Feb. 11, 1980, as amended by Amdt. 193-18, 69 FR 11337, Mar. 10, 2004]

**§ 193.2707 Operations and maintenance.**

(a) Each operator shall utilize for operation or maintenance of components only those personnel who have demonstrated their capability to perform their assigned functions by—

(1) Successful completion of the training required by §§ 193.2713 and 193.2717; and